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SOME OF THE EVOLUTIONARY CONSEQUENCES OF WAR

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THOUGH war has been in the world since the time of the trilobites, and though its importance in the evolution of animal types has long been a cardinal article in the creed of biologists; yet the sociological and biological significance of human warfare with reference to the evolution of man's body and mind has never been quite adequately studied, either from the standpoint of sociology or of biology.

In view of the universality of war, there naturally arises the question: What physical and spiritual types of Man does war select, and what types does it eliminate? No question, indeed, would seem more to invite and more to merit thorough investigation. But the problem is not only difficult: it is readily obscured by associated sentiments and passions, and, so far, it has been more often exploited by military or pacific partisans than elucidated by patient and impartial investigators. Even the wary spirit of scientific inquiry seems readily corrupted by the emotional psychology of war, and even in scientific papers we find doubtful data leading to undoubting generalisations, and strong prejudices drawing, from very weak premises, very wild conclusions.

Thus, we find competent biologists, such as the eminent pacifist Prof. David Starr Jordan, stating, with reference to the dysgenics of war, that war caused degeneracy in the Romans, and that the Napoleonic wars lopped inches off the stature of the Frenchmen.

Yet both statements, though widely

current, have never been proved, and are probably erroneous.

With regard to the Romans. Dr. Otto Seeck, who has made a careful investigation of the subject, comes to the conclusion that the decline of Rome was largely due to political murders and to voluntary enlistment; and such a view is quite as plausible as the view Prof. Jordan prefers. But it might be equally well contended that the fall of Rome was due to malaria, or too much eating, or too many hot baths. We do not know, and we can speculate as much as we please. But we must not use speculations as corner-stones in any scientific theory of the consequences of war.

With regard to the lopping of the French. It is by no means certain that the modern Frenchman is shorter than the Frenchman of Napoleon's time, and even granting that he is shorter, it would be very difficult to prove that the shortening is the result of war. Further, even if we could prove both propositions, we should still be unwarranted in formulating a general law; for the Teutons, who have possibly suffered more from war than any other race in Europe, are a tall race; and the Montenegrins, who have been decimated by war for centuries, are much above ordinary stature; rendering it difficult to believe that they have been pruned by battle.

In old-time wars, when men fought hand to hand with their foes, it is quite possible that the tall strong men, with weight and reach, killed the small weak men—though, even then, brains were of some survival

value, and the "race was not always to the swift and the battle to the strong"—and that, therefore, old-time wars led, in some degree, to an increase in the average stature of fighting nations. But it is much less likely that recent wars, waged with modern firearms, picked off the tall so much more frequently than the short as to lead to a permanent reduction in the average height of the belligerent nations. It must be remembered *that the selective agent in most recent wars has been bacteria rather than bullets*, and we have no reason to think that the tall succumbed more readily to disease than the very short.

In any case, it would be extremely difficult to make any permanent alteration in the average stature of any nation of pure or well-mixed race by any process of lethal selection. Variations of stature in the members of any race are, as we now know, mainly a matter of nurture—a matter of mother's milk, oatmeal, fresh air, and so on—and a tall man's progeny and a short man's progeny tend respectively to go up and down to the average height of the race; or, as the biometricians put it, "to revert to the mean." Johanssen, in very interesting experiments, has shown that large pea plants and small pea plants grown from peas of the same pea-pod have equal potentialities; and the individuals, big and small, of a nation are, so to speak, from the same pea-pod, or of the same stock.

A nation like the French, it is true, consists of three distinct races: in the north, the Scandinavian, tall and blonde; in the middle, the Slavonic, medium-sized and dark; and in the south, the Mediterranean, dark and short; and, if so be, a large proportion of the two first races happened to be killed off, there might be a permanent reduction in the height of Frenchmen, but even then the women of Scandinavian and Slavonic stock might be able to per-

petuate the physique of their races. Further, any statistics that might happen to show diminution in height of a nation after war must be interpreted with caution, since in many cases the diminution may be due to the poverty and underfeeding that so often follow war.

This slight discussion of these comparatively simple questions may serve to show how carefully we must go when we consider the eugenics and dysgenics of war.

Sweeping statements with regard to the selective consequences of war in general cannot be made. In every war there is a complicated interplay of conflicting factors; and in each war the factors vary in weight and in direction, so that each war, and almost each battle, will have its own special consequences. A war waged under modern conditions, with machine-guns, and poison-gas, and serums, must be very different in eugenic character and consequences from a war waged with assegais and arrows. A war, again, involving a whole nation must differ greatly in its evolutionary results—social and biological—from a war fought by a few mercenary troops.

Let us, then, consider a special case on its own merits. Let us consider the probable evolutionary effect of the present European war on the biological characters of the English, French, Italian, and Teutonic peoples. (In this inquiry we disregard Russia and the United States, for a great part of their huge and very heterogeneous population have been unaffected and will be unaffected by the conflict that is now raging, while the smaller nations pay their own particular tribute to Mars and would require separate consideration.)

In our inquiry we must, in the first place, ask whether the preliminary medical selection of recruits is of evolutionary value.

The nations we have named have sent

almost every *fit* man within certain age-limits to fight, and almost every *unfit* man within these ages has been left behind; and a cry goes up from the pacifist and the quasi-scientific and even from the scientific that since the fit go to be killed and since the unfit remain at home to procreate their kind, this preliminary sifting with the temporary procreative advantages it gives to the unfit must, in itself, have evil racial consequences.

It is very doubtful, however, whether this preliminary medical selection can have any important or permanent effects on the future physical fitness of the fighting peoples. Since I myself have examined and selected some thousands of recruits, I have some special knowledge of the nature of the medical selection, and I would draw attention to the following facts, which seem to have been rather ignored.

The great majority of men rejected, are rejected on account of short-sight, rupture, flat feet, varicose veins, heart disease.

Now, short-sight is very often a product of bad domiciliary conditions; rupture is very often due to accident; flat feet and varicose veins are often the result of too much standing; heart disease is very often caused by rheumatic fever. Most of these defects and diseases are acquired, have no effect on the racial value of the individual—since acquired characters are not immediately transmitted—and are not likely to affect his offspring. Even the men who are rejected for deficient physique are not likely to depress unduly the average physique of coming generations; they are a very small fraction of the total male population; many of them had finished their paternal career before the war; and, in any case, most of them are victims of environment, and their offspring under good conditions will tend, as we have already pointed out, to return to the average physique of the race to which they belong.

I doubt, indeed, whether, taking all things together, the average enlisted man has three per cent. more racial value than the average unenlisted person.

I cannot, therefore, quite agree with Dr. Abraham Jacobi when he asserts that “the unfit fathers produce unfit children;” I see little reason to fear that the race will suffer from the procreative advantages of the unfit left at home, especially since such advantages have been probably nullified to a great extent by an epidemic of soldier weddings.

Now, let us look at selection in the army by war itself. Armies are not composed, as popular writers assert, of “the flower of the land:” they contain men of all sorts and sizes, sons of Anakim, and bantams—men of 50-inch chests, and men of 32-inch chests—magnificent specimens of humanity, and very feeble creatures—men of keen sight, and men of impaired vision.

The question is: Does modern war select the best or worst of these? and if the best, will the net result be serious racial deterioration?

That is a difficult question, and I should not care to answer it dogmatically. But, considering the nature of modern warfare, the impartiality of machine-guns, the wholesale massacre of shrapnel, it seems very probable that death is indiscriminate in his harvest. It is no longer a matter of individual courage and initiative; it is no longer a matter of hand-to-hand combat, where the strong or cunning man survives; it is no longer a matter of disease *versus* constitution; it is no longer a case of battle in the open where the bigger men are the better targets; it is a case of blind, indiscriminate slaughter.

On the dysgenic side we might point out that the best regiments have, in most cases, been given the most dangerous tasks; but whether this selection would be suf-

ficiently stringent to have much effect on the race as a whole must be doubtful, especially in view of the fact that many more are wounded and captured than killed. And even if—as we question—modern warfare *does* chiefly kill off the bigger and the stronger men, so also do many industrial occupations. The average physique of many great industrial centres is much below that of the general population, and the discrepancy is not wholly nurtural. Weaving machines involving sedentary work, bad air, and meagre diet, eliminate the big man much more discriminately than shooting machines: for the big man requires more air and food than he can get. In the United States alone the yearly toll of poverty and preventable diseases amounts to 250,000 dead, and 4,700,000 wounded; and it has been said that the net result of the American steel industry is the manufacture of millionaires and the slaughter of babies. The slaying may in some cases be a eugenic process—though in many industries, as we have said, the most fit to survive are certainly not those of best physique—but the wounding is probably much more dysgenic than the wounding of war. So that we reach the curious paradox that war is eugenic in so far as it takes men from the dysgenic industries of peace.

Even apart from industrial selection, physique, *qua physique*, has no particular survival value on the battle-fields of peace. Money is one of the most important weapons of the armies of peace; and selection by gold is at least as dysgenic as selection by lead or steel. A puny millionaire is more likely to survive and propagate his stock than an impecunious Hercules. When we think, too, of the deep-reaching and wide-reaching dysgenic effects of drunkenness and certain racial diseases, we find it difficult to attach great importance to any possible dysgenic selection by war.

On the eugenic side may be counted the good and sufficient food, the open-air life, and the physical training that soldiers enjoy. These tend to improve the soldiers' general health and to diminish their vulnerability to tuberculosis and some other diseases, and may have some actual racial results, since war, through higher wages, with less overcrowding and more food, will also tend to improve the health of the women and the children of the lower classes. (This does not apply to Germany, which is probably suffering from insufficient food.) Such improvement in health, however, will be probably quite nullified by greater prevalence of drunkenness, nerve diseases, and vice diseases, and by the greater poverty and destitution that will follow the war.

It is obviously very difficult to estimate the net result of such conflicting factors as we have mentioned; but, altogether, and giving due and full weight to the considerations, that it is only a *part* of the male population (the part between the ages of 19 and 45) who are subject to the direct selection of war; that many of these leave children; that many skilled workmen of war age are shielded in war factories; that all females are unselected by war; that variations in physique, even if selected, are often only nurtural, and that in any case all stocks remain well represented in the survivors—taking everything together, and giving due weight to these special considerations, I think we might be justified in concluding that the present war is unlikely to have any important eugenic or dysgenic effects on the three nations we have under view.

But one very interesting and important eugenic action—an action that has been hitherto strangely overlooked—the war will have.

It will lead to a much more stringent selection of women by men.

If men and women are about equal in numbers there is some assortment, but little selection. If there are more men than women there is a selection of men by women. If there are more women than men there will be a selection of women by men. And the greater the disparity in numbers the more stringent will be the selection.

In the case of the four nations under review, there has always been a deficiency of adult males with corresponding selection of females; but, after the war, the deficiency will be much greater, and will lead—especially in view of a probably reduced marriage rate—to a much more stringent selection.

How this fact, and the interest and importance of this fact, have so long escaped scientific notice, it is difficult to understand; but there it is, an unquestionable evolutionary factor.

Such increased stringency, too, of selection of women must in some degree follow every war, so that it is a general law; and it is quite possible that in it may be found the main evolutionary significance and use of war.

I do not for a moment agree with Prof. David Starr Jordan when he asserts that race progress finds its cause in selection only: I believe that there is a *vis a tergo* driving life along certain progressive lines quite apart from selection. But selection plays its part, and no one can doubt the evolutionary value of sexual selection; and war, in this way we have indicated, greatly increases the potency of such selection. If, in the nations we are considering, five million men are killed, that means some millions of women denied motherhood, and a more stringent selection of those chosen to bear children. It is not men the bullets select, but women. War slays men blindly and indiscriminately; there is no racial selection there:

the real racial selection is the selection of women made by the eyes and the hearts of the men who survive the war.

Now, on what lines does this selection proceed, and what are its main biological results?

When men have an opportunity to select wives, or when in their hands the choice chiefly lies, there are certain physical characters they usually seek; and these are health, physique, and beauty: for Nature has wisely arranged that men should be attracted by characters that imply capacity for motherhood.

Since health, physique, and beauty are transmitted, it follows that this matrimonial selection favours the evolution of these qualities, and will probably more than compensate for any possible reverse selection by the chances of war.

The upper-class Turks and the upper-class English, who for generations have had the opportunity and have taken the opportunity of selecting healthy and beautiful women, are distinguished for their health, beauty, and physique; and the fine physique and fine features of the Albanians and Montenegrins may perhaps be explained by similar sexual selection.

Anyhow, this selection does take place: it would seem to be the only important evolutionary factor in war so far as the physical characters of the present belligerents are concerned, and to make for health, physique, and beauty.

Health and physique, however, are characters with spiritual consequences, for it is well known that for a *mens sana corpus sanum* is required. It is very possible, too, that the selection will have more specific results than was summarised in the phrase *mens sana*.

Men select, as we have said, not only health and physique, but also that subtle something called womanly beauty. Now, sense of beauty and craving for beauty

are obscure instincts; we do not understand their meaning; but they are also very real and very strong and universal passions, and we cannot doubt that they are factors in the upward moral and biological progress of man, even though we may not subscribe to the dictum: "Tis eternal law that first in beauty will be first in might."

Of course, there is beauty *and* beauty: the ideal of the Hottentot can hardly be said to make for progress of any kind, and the ideal of the Turk is perhaps largely to blame for the apathy and stupidity of that nation; but I think it will be found that civilized man is inclined more and more to choose such types of female beauty as are correlated with a beautiful mind and with the more feminine virtues of sympathy, unselfishness, gentleness, motherliness. Every war, therefore, will result in a selection that will do something to set up evolutionary tendencies opposite to its own brutal, truculent, anti-social spirit.

Verily it is a fool-proof world!

It is interesting to note, *en passant*, that selection of this nature also makes for the differentiation of nations; for each nation has its own taste in beauty, and this taste, no doubt, has some survival value.

Wisely did Socrates identify the beautiful and the useful, and wisely does William Watson sing:

"Beauty, the Vision whereunto
In joy, with pantings from afar,
Through sound and odour, form and hue,
And mind, and clay, and worm, and star,
Now touching goal, now backward hurled
Toils the indomitable world."

To sum up, then, any influences of the European war on the racial evolution of English, French, and German nations are probably very unimportant, save the racial results produced by the more stringent selection of women which will follow the war as a result of the decimation of men.

"There's a Divinity that shapes our ends, rough-hew them how we will!"

Science Progress, London.

VIGNETTE

SAPHIR, the famous wit, whose clever sayings were, about the middle of the last century, the delight of Viennese society, once, with a promising twinkle of his eye, said to a young lady, "Do you know the difference between a Diplomat and a Lady? No? It is very simple. If a Diplomat says "Yes," he means "Perhaps;" if he says "Perhaps," he means "No," and if he says "No," well, then he is no Diplomat. With a Lady it is just opposite. If a Lady says "No," she means "Perhaps;" if she says "Perhaps," she means "Yes," and if she says "Yes"—well, then she is no Lady." And though his fair friend tried to look indignant, yet he saw the smile that played in the corners of her mouth and sparkled through her demurely lowered lids.